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EXAMINER

ADDISU, SARA

ART UNIT	PAPER NUMBER
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3722

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Claim Objections

1. Claim 3 is objected to because of the following informalities: the word either (line 3, last word) should be deleted.
2. Claims 35 and 36 are objected to because of the following informalities: Both Claims 35 and 26, recite "...wherein said securing element connects said blade to said body, whereby...". This limitation is the same as claim 34, page 13, lines 5-6. Examiner believes that the underlined portion should be deleted.

Appropriate correction is required.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claimed subject matter of claims 9 and 22 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. To further explain, the Claims 9 and 22 recites "...the securing element head portion has an end which is flush mounted or recess mounted in relation to said blade face". Claim 22 depends from Claim 21 (and claim 9 from 8) which recites (lines 13-14 of claim 21) "...wherein said securing

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element connects said blade to said body whereby the securing element has a head portion which extends from said blade face". Claims 9 and 22 relate to figures 10 and 10A while Claims 8 and 21 refer to another embodiment, figures 11 and 12. According to the Specification (page 17, lines 28-30), the screw head extends "a distance A away or out from the face surface..", which means the screw head is not flush. Therefore the it is impossible for the head portion to both extend from said blade face (as shown in fig. 10 and 10A) as well as be flush mounted or recess mounted (as shown in a different embodiment, fig 11 and 12).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 9 and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 9 and 22 recite "...the securing element head portion has an end which is flush mounted or recess mounted in relation to said blade face". Claim 22 depends from Claim 21, while claim 9 depends from claim 8, which recites (lines 13-14 of claim 21) "...wherein said securing element connects said blade to said body whereby the securing element has a head portion which extends out from said blade face". Claims 9 and 22 relate to figures 10 and 10A while Claims 8 and 21 refer to another embodiment, figures 11 and 12. According to the Specification (page 17, lines 28-30), the screw head extends "a distance A away or out from the face surface..",

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which means the screw head is not flush. Therefore the it is impossible for the head portion to both extend from said blade face (as shown in fig. 10 and 10A) as well as be flush mounted or recess mounted (as shown in a different embodiment, fig 11 and 12). For the purpose of this office action, Examiner treats them as being two different limitations (and not a combination).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 32, 33, 35 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Both Claim 32 and 33 have the same limitation of claim 25, page 11, lines 6-11. Since claims 32 and 33 depends from claim 25, it is not clear how they (claim 32 and 33) further limits the claim. For the purpose of this office action, Examiner assumes that the limitation of claims 32 and 33 are the same as the independent claim (i.e. they do not further limit claim 25).
- The first part of both Claims 35 and 36, recite "...wherein said securing element connects said blade to said body, whereby...". This limitation is

the same as claim 34, page 13, lines 5-6. It is not clear how the first part of claims 35 and 36 further limits the claim. For the purpose of this office action, Examiner assumes that the underlined limitation of claims 35 and are the same as the independent claim 34 (i.e. they do not further limit claim 34).

6. Claim 39, line 3, recites the limitation "first distance". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 23, 24, 3, 4, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. (U.S. Patent No. 4,691,600), in view of Bourguignon (USP 2,970,843) and further in view of AAPA.

Regarding claim 23, CARLSON ET AL. teaches a milling head (10) with an arbor (33) for removing an outer radial thickness of a tube (11) to a predetermined depth (L) from the tube end ('600, figure 1 & 2 and Col. 1, lines 5-8 and Col. 2, lines 38-56).

Regarding claim 24, the milling head (10) comprises a cylindrical body (18) having an annular recess, said body adapted to be connected to a rotary milling tool, and one or more cutting blades (26, 31 and 32) connected to said body by a securing element (27), each said blade disposed circumferentially around the rotational axis of the milling head ('600, figures 1, 3, 5 & 6). Regarding claim 3, CARLSON ET AL.'s tube film removal milling head is capable of being utilized to remove a predetermined amount of tube film from the outer diameter of the tube, as well as any weld overlay and/or membrane material present (i.e. simultaneously). Regarding claim 4, CARLSON ET AL. teaches in figure 6, cutting blades (26, 31 and 32) having a face surface with a bore extending therethrough to receive securing element (27), the blades having a countersink around said bore capable of receiving the head of said securing element (27) such that it is flush mounted. Regarding claims 4, 6 and 24 CARLSON ET AL. does not expressly disclose the blade having a cutting sweep defined by an inner radius which is adapted to remove 2-25% of the outer thickness of the tube and outer radius that is at least equal to the tube outer diameter (Claim 24), or up to about 10 % (Claim 6) Additionally, CARLSON ET AL. does not expressly disclose the removal of the annular outer thickness being performed to a depth of 0.25-1.5 inches (Claim 4) or 0.25-1 inch (Claim 6) when measured from the tube end. However, there is nothing limiting the structure of CARLSON ET AL. from being "adapted" to remove different ranges of annular outer

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tube thickness as well as to different depths from the tube end, depending on the size of the insert being utilized. It is well known in the machining art to use whatever cutting blade was desired or expedient based on the particular machining operation required and discovering the optimum or workable range involves only routine skill in the art. This concept is also supported by CARLSON ET AL. ('600, Col. 3, lines 14-17 and Col. 4, lines 11-12). Furthermore, Applicant does not provide any criticality or unexpected results for the claimed ranges of outer radial thickness removal or the depth from the tube end (page 16, lines 21-31).

However, CARLSON ET AL. fails to teach a securing device for securing the arbor of the milling tool on the tube.

BOURGUIGNON teaches an expanding arbor adaptor comprising an arbor (26) having a forward end with a collet type construction having slots (30) ('843, figures 1 and 2 & Col. 2, lines 6-12). BOURGUIGNON also teaches the collet part of the arbor (26) expanding such that the arbor firmly secures the workpiece in place during machining or other operations ('843, Col. 2, lines 55-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify CARLSON ET AL. such that the arbor incorporates a collet type construction, as taught by BOURGUIGNON for the purpose of firmly secures the workpiece in place during machining or other operations ('843, Col. 2, lines 55-65). It should also be noted that AAPA confirms that rotary milling tool being temporarily connected or secured to a tube during operation using a collet or other securing device is known in the art (Specification, page 15, lines 22-24). AAPA also

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states that arbors and stabilization means are well known in the art (Specification, page 13, lines 16-17).

8. Claims 2, 10, 12, 14, 16, 21, 22, 25-35, 37 and 39, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. (U.S. Patent No. 4,691,600), in view of Bourguignon (USP 2,970,843) and further in view of AAPA and Ricci (USP 5,189,933).

The modified device of CARLSON ET AL. teaches a milling head (10) for removing an outer radial thickness of a tube (11) to a predetermined depth (L) from the tube end ('600, figure 1 & 2 and Col. 1, lines 5-8 and Col. 2, lines 38-56) and a securing device for securing the arbor of the milling tool on the tube, as set forth in the above rejection. Regarding claims 10, 12, 22 and 35, CARLSON ET AL. teaches in figure 6, cutting blades (26, 31 and 32) having a face surface with a bore extending therethrough to receive securing element (27), the blades having a countersink around said bore capable of receiving the head of said securing element (27) such that it is flush mounted. Regarding claims 21, 25 and 34, CARLSON ET AL. teaches a milling head (10) comprising a cylindrical body (18) having an annular recess, said body adapted to be connected to a rotary milling tool, and one or more cutting blades (26, 31 and 32) connected to said body by a securing element (27), each said blade disposed circumferentially around the rotational axis of the milling head ('600, figures 1, 3, 5 & 6),

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as set forth in the above rejection. Regarding claim 30, CARLSON ET AL.'s tube film removal milling head is capable of being utilized to remove a predetermined amount of tube film from the outer diameter of the tube, as well as any weld overlay and/or membrane material present.

CARLSON ET AL. does not expressly disclose the blade having a cutting sweep defined by an inner radius which is adapted to remove 2-25% of the outer thickness of the tube and outer radius that is at least equal to the tube outer diameter (Claims 10, 14, 16, 21, 25, 29, 34, 37 and 39). Additionally, CARLSON ET AL. does not expressly disclose the removal of the annular outer thickness being performed to a depth of 0.25-1.5 inches (Claims 27 and 28). However, there is nothing limiting the structure of CARLSON ET AL. from being "adapted" to remove different ranges of annular outer tube thickness as well as to different depths from the tube end, depending on the size of the insert being utilized (also regarding claim 25, 32 and 33, in the event a larger size insert is used for machining, the lower cutting edge of the insert would extend below the lower end of the milling head body). It is well known in the machining art to use whatever cutting blade was desired or expedient based on the particular machining operation required and discovering the optimum or workable range involves only routine skill in the art. This concept is also supported by CARLSON ET AL. ('600, Col. 3, lines 14-17 and Col. 4, lines 11-12). Furthermore, Applicant does not provide any criticality or unexpected results for the claimed ranges of outer radial thickness removal or the depth from the tube end (page 16, lines 21-31).

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However, the modified device of CARLSON ET AL. fails to teach a step of removing a weld overlay adjacent the tube end.

RICCI teaches a portable lathe especially designed to remove overlay welds having a tool translating mechanism that provides both radial and axial movement of the tool bit relative to the weld material to be removed ('933, abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate another step to CARLSON ET AL.'s invention where a portable lathe is used to remove weld overlay, as taught by RICCI for the purpose of remove overlay welds from arcuate surfaces with a minimum of human intervention to slow the propagation of IGSCC at the joints between the pipes ('933, Col. 2, lines 12-15 and abstract lines 5).

9. Claims 13, 15, 17-19, 36, 38, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. (U.S. Patent No. 4,691,600), in view of Bourguignon (USP 2,970,843) and further in view of AAPA , Ricci (USP 5,189,933) and Ueda et al. (U.S. Pub. No. 2004/0234349).

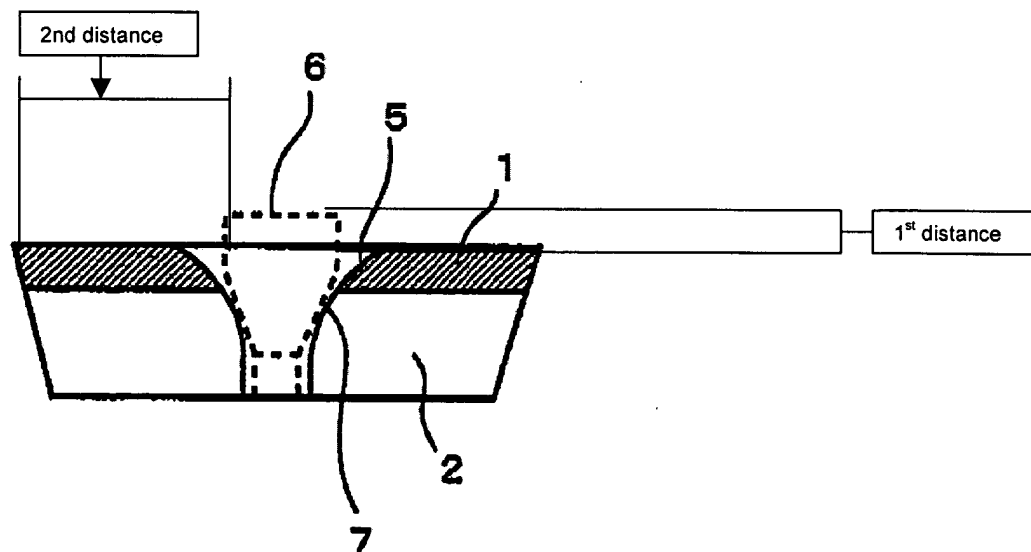
The modified device of CARLSON ET AL. teaches a milling head (10) for removing an outer radial thickness of a tube (11) to a predetermined depth (L) from the

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tube end and cutting blades (26, 31 and 32) having a face surface with a bore extending therethrough to receive securing element (27), as set forth in the above rejection ('600, figure 1 & 2 and Col. 1, lines 5-8 and Col. 2, lines 38-56).

However, the modified device of CARLSON ET AL. fails to teach a securing element having a head that extends from the blade face.

Ueda et al. teaches a cutting insert having a countersink around it's bore for receiving a portion of the bead of the bolt (6) while having a top portion that extends out from the insert face surface (see figure 2B). Ueda et al. also teaches first distance which is less than second distance (and is less than 90% and 95% of the second distance) (see diagram below).



Regarding claims 15, 17, 38 and 40, CARLSON ET AL. does not expressly disclose the blade having an cutting sweep inner radius of about 2-15% of the outer thickness of the tube (Claims 15 and 38) or 2-10% (Claims 17 and 40). However, as mentioned above, there is nothing limiting the structure of CARLSON ET AL. from removing different ranges of annular outer tube thickness, depending on the size of the insert being utilized. It is well known in the machining art to use whatever cutting blade was desired or expedient based on the particular machining operation required and discovering the optimum or workable range involves only routine skill in the art, In re Aller. This concept is also supported by CARLSON ET AL. ('600, Col. 3, lines 14-17 and Col. 4, lines 11-12). Furthermore, Applicant does not provide any criticality or unexpected results for the claimed ranges of outer radial thickness removal or the depth from the tube end (page 16, lines 21-31).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to secure the blade to the body utilizing a bolt that has a head that extends out from the blade face, as taught by Ueda et al. because it's well known in the art to select a clamping-hole configuration that is in conformance with the strength and mounting precision rendered necessary by the tool (2004/0234349, page 2, paragraph 18, lines 13-15).

10. Claims 8 and 9, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. (U.S. Patent No. 4,691,600), in view of Bourguignon (USP 2,970,843) and further in view of AAPA, Hillestad (U.S. Patent No. 5,542,177) and Ueda et al. (U.S. Pub. No. 2004/0234349).

The modified device of CARLSON ET AL. teaches a milling head (10) for removing an outer radial thickness of a tube (11) to a predetermined depth (L) from the tube end ('600, figure 1 & 2 and Col. 1, lines 5-8 and Col. 2, lines 38-56) and a securing device for securing the arbor of the milling tool on the tube, as set forth in the above rejections. Regarding claim 9, CARLSON ET AL. teaches in figure 6, cutting blades (26, 31 and 32) having a face surface with a bore extending therethrough to receive securing element (27), the blades having a countersink around said bore capable of receiving the head of said securing element (27) such that it is flush mounted.

However, the modified device of CARLSON ET AL. fails to teach a beveling step with a second milling head. The modified device of CARLSON ET AL. also fails to teach a securing element having a head that extends from the blade face.

Hillestad teaches in a second embodiment, a rotary milling head (220) having blades (262) to bevel the end of the tube as well as blades (238) to cut the membrane

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to a predetermined depth ('177, figures 9 & 10 and Col. 6, lines 38-42 & Col. 7, lines 4 & 43).

Ueda et al. teaches a cutting insert having a countersink around it's bore for receiving a portion of the bead of the bolt (6) while having a top portion that extends out from the insert face surface (see figure 2B). Ueda et al. also teaches first distance which is less than second distance (see diagram above).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize a second milling head to bevel the tube, as taught by Hillestad because proper preparation of exposed tube ends of the existing boiler tube wall requires chamfering or beveling of the exposed tube ends to facilitate a good weld between the new tube wall section and the existing boiler tube wall ('177, Col. 1, line 59 through Col. 2, line 4).

It would have also been obvious to one of ordinary skill in the art at the time of the invention was made to secure the blade of CARLSON ET AL.'s invention to the body utilizing a bolt that has a head that extends out from the blade face, as taught by Ueda et al. because it's well known in the art to select a clamping-hole configuration that is in conformance with the strength and mounting precision rendered necessary by the tool (2004/0234349, page 2, paragraph 18, lines 13-15).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sara Addisu at (571) 272-6082. The examiner can normally be reached on 8:30 am - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on (571) 272-4502. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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4/1/06


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